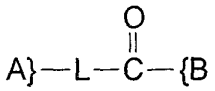
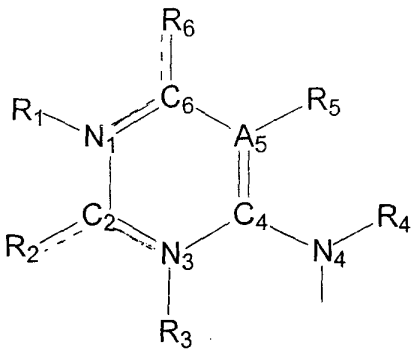
WE CLAIM:

1. A pyrimidine derivative or analogue having the schematic structure:



where:

(a) A is an amino-substituted six-membered heterocyclic moiety of formula (I)



where:

(i) if the bond between N_1 and C_6 is a single bond, then the bond between C_6 and R_6 is a double bond, R_6 is O or S, and R_1 is hydrogen, alkyl, aralkyl, cycloalkyl, or heteroaralkyl;

(ii) if the bond between N_1 and C_6 is a double bond, then the bond between C_6 and R_6 is a single bond, R_1 is not present, and R_6 is hydrogen, halo, amino, OQ_1, SQ_1, $NHNH_2$, $NHOQ_1$, NQ_1Q_2, or NHQ_1, where Q_1 and Q_2 are alkyl, aralkyl, heteroaralkyl, aryl, heteroaryl, alkanoyl, aroyl, aralkanoyl, heteroaralkanoyl, heteroaroyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, aralkylsulfonyl, or heteroaralkylsulfonyl in which the alkyl portions can be cyclic and can contain from 1 to 3 heteroatoms which can be N, O, or S, and when Q_1 and Q_2 are present together and are alkyl, they can be taken together to form a 5- or 6- membered ring which can contain 1 other heteroatom which can be N, O, or S, of which the N can be further substituted with Y_2, where Y_2 is alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, alkanoyl,

aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, aralkylsulfonyl, heteroaralkylsulfonyl, alkoxycarbonyl, aryloxycarbonyl, heteroaryloxycarbonyl, aralkoxycarbonyl, heteroaralkoxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, aralkylaminocarbonyl, or heteroaralkylaminocarbonyl, in which the alkyl portions can be cyclic and can contain from 1 to 3 heteroatoms which can be N, O, or S;

(iii) if the bond between C_2 and N_3 is a single bond, then the bond between C_2 and R_2 is a double bond, R_2 is O or S, and R_3 is hydrogen or alkyl;

(iv) if the bond between C_2 and N_3 is a double bond, then the bond between C_2 and R_2 is a single bond, R_3 is not present, and R_2 is hydrogen, alkyl, aralkyl, cycloalkyl, heteroaralkyl, halo, amino, OQ_1, SQ_1, $NHNH_2$, $NHOQ_1$, NQ_1Q_2, or NHQ_1, where Q_1 and Q_2 are alkyl, aralkyl, heteroaralkyl, aryl, heteroaryl, alkanoyl, aroyl, aralkanoyl, heteroaralkanoyl, heteroaroyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, aralkylsulfonyl, or heteroaralkylsulfonyl in which the alkyl portions can be cyclic and can contain from 1 to 3 heteroatoms which can be N, O, or S, and when Q_1 and Q_2 are present together and are alkyl, they can be taken together to form a 5- or 6-membered ring which can contain 1 other heteroatom which can be N, O, or S, of which the N can be further substituted with Y_3, where Y_3 is alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, alkanoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, aralkylsulfonyl, heteroaralkylsulfonyl, alkoxycarbonyl, aryloxycarbonyl, heteroaryloxycarbonyl, aralkoxycarbonyl, heteroaralkoxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, aralkylaminocarbonyl, or heteroaralkylaminocarbonyl, in which the alkyl portions can be cyclic and can contain from 1 to 3 heteroatoms which can be N, O, or S;

(v) R_4 is hydrogen, alkyl, aralkyl, heteroaralkyl, alkanoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkoxycarbonyl, aryloxycarbonyl, heteroaryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, or heteroarylaminocarbonyl;

(vi) A_5 is carbon or nitrogen;

(vii) if A_5 is nitrogen, then R_5 is not present;

(viii) if A_5 is carbon, then R_5 is hydrogen, amino, alkyl, alkoxy, halo, nitro, aryl, cyano, alkenyl, or aralkyl;

(x) (ix) N_4 is bonded to L;

(b) L is a hydrocarbyl moiety of 1 to 6 carbon atoms that can be cyclic, with the hydrocarbyl moiety being optionally substituted with one or more substituents selected from the group consisting of lower alkyl, amino, hydroxy, lower alkoxy, lower alkylamino, lower alkylthio and oxo; and

(c) B is -OZ or $N(Y_1)$-D, where Z is hydrogen, alkyl, aryl, heteroaryl, cycloalkyl, aralkyl, or heteroaralkyl, D is a moiety that promotes absorption of the derivative or analogue, and Y_1 is hydrogen, alkyl, aryl, heteroaryl, aralkyl, or heteroaralkyl, which, when taken with D, can form a cyclic 5- or 6-membered saturated structure which can contain one other heteroatom which can be O, N, or S, of which N can be further substituted with Y_4, where Y_4 is alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, alkanoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, aralkylsulfonyl, heteroaralkylsulfonyl, alkoxycarbonyl, aryloxycarbonyl, heteroaryloxycarbonyl, aralkoxycarbonyl, heteroaralkoxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, aralkylaminocarbonyl, or heteroaralkylaminocarbonyl, in which the alkyl portions can be cyclic and can contain from 1 to 3 heteroatoms which can be N, O, or S.

2. The pyrimidine derivative or analogue of claim 1 wherein A_5 is carbon and the six-membered heterocyclic moiety is a pyrimidine moiety.

3. The pyrimidine derivative or analogue of claim 2 wherein R_2 is O and R_3 is hydrogen.

4. The pyrimidine derivative or analogue of claim 3 wherein R_5 is hydrogen, R_6 is amino, and the pyrimidine moiety is cytosine.

5. The pyrimidine derivative or analogue of claim 3 wherein R_1 is hydrogen, R_5 is methyl, R_6 is O, and the pyrimidine moiety is thymine.

6. The pyrimidine derivative or analogue of claim 3 wherein R_1 is methyl, R_5 is hydrogen, R_6 is O, and the pyrimidine moiety is uracil.

7. The pyrimidine derivative or analogue of claim 3 wherein R_1 is hydrogen, R_5 is methyl, R_6 is O, and the pyrimidine moiety is 3-methyluracil.

8. The pyrimidine derivative or analogue of claim 3 wherein R_1 is methyl, R_5 is methyl, R_6 is O, and the pyrimidine moiety is 3-methylthymine.

9. The pyrimidine derivative or analogue of claim 3 wherein R_5 is hydrogen, R_6 is methylamino, and the pyrimidine moiety is 4-methylcytosine.

10. The pyrimidine derivative or analogue of claim 3 wherein R_5 is methyl, R_6 is amino, and the pyrimidine moiety is 5-methylcytosine.

11. The pyrimidine derivative or analogue of claim 3 wherein R_5 is hydroxymethyl, R_6 is amino, and the pyrimidine moiety is 5-hydroxymethylcytosine.

12. The pyrimidine derivative or analogue of claim 3 wherein R_1 is hydrogen, R_5 is hydroxyl, R_6 is O, and the pyrimidine moiety is 5-hydroxyuracil.

13. The pyrimidine derivative or analogue of claim 3 wherein R_1 is hydrogen, R_5 is carboxymethyl, R_6 is O, and the pyrimidine moiety is 5-carboxymethyluracil.

14. The pyrimidine derivative or analogue of claim 3 wherein R_1 is hydrogen, R_5 is hydroxymethyl, R_6 is O, and the pyrimidine moiety is 5-hydroxymethyluracil.

15. The pyrimidine derivative or analogue of claim 2 wherein R_2 is S and R_3 is hydrogen.

16. The pyrimidine derivative or analogue of claim 15 wherein R_1 is hydrogen, R_5 is hydrogen, R_6 is O, and the pyrimidine moiety is 2-thiouracil.

17. The pyrimidine derivative or analogue of claim 15 wherein R_1 is hydrogen, R_5 is methylamino, R_6 is O, and the pyrimidine moiety is 5-methylamino-2-thiouracil.

18. The pyrimidine derivative or analogue of claim 15 wherein R_1 is hydrogen, R_5 is methyl, R_6 is O, and the pyrimidine moiety is 5-methyl-2-thiouracil.

19. The pyrimidine derivative or analogue of claim 15 wherein R_5 is hydrogen, R_6 is amino, and the pyrimidine derivative or analogue is 2-thiocytosine.

20. The pyrimidine derivative or analogue of claim 2 wherein R_2 is amino and the bond between C_2 and N_3 is a double bond.

21. The pyrimidine derivative or analogue of claim 20 wherein R_1 is hydrogen, R_5 is hydrogen, R_6 is O, and the pyrimidine moiety is 2-aminopyrimidinone.

22. The pyrimidine derivative or analogue of claim 20 wherein R_5 is hydrogen, R_6 is Cl, and the pyrimidine moiety is 2-amino-4-chloropyrimidine.

23. The pyrimidine derivative or analogue of claim 2 wherein R_2 is hydrogen and the bond between C_2 and N_3 is a double bond.

24. The pyrimidine derivative or analogue of claim 23 wherein R_5 is hydrogen, R_6 is Cl, and the pyrimidine moiety is 4-chloropyrimidine.

25. The pyrimidine derivative or analogue of claim 23 wherein R_5 is amino, R_6 is Cl, and the pyrimidine moiety is 5-amino-4-chloropyrimidine.

26. The pyrimidine derivative or analogue of claim 23 wherein R_5 is methyl, R_6 is Cl, and the pyrimidine moiety is 4-chloro-5-methylpyrimidine.

27. The pyrimidine derivative or analogue of claim 23 wherein R_5 is hydroxymethyl, R_6 is Cl, and the pyrimidine moiety is 4-chloro-5-hydroxymethylpyrimidine.

28. The pyrimidine derivative or analogue of claim 23 wherein R_5 is carboxymethyl, R_6 is Cl, and the pyrimidine moiety is 4-chloro-5-carboxymethylpyrimidine.

29. The pyrimidine derivative or analogue of claim 23 wherein R_1 is hydrogen, methyl, or ethyl, R_5 is hydrogen, methyl, or ethyl, and R_6 is O.

30. The pyrimidine derivative or analogue of claim 29 wherein R1 is hydrogen, R5 is hydrogen, and the pyrimidine moiety is pyrimidinone.

31. The pyrimidine derivative or analogue of claim 1 wherein L has the structure $-(CH_2)_n-$ wherein n is an integer from 1 to 6.

32. The pyrimidine derivative or analogue of claim 31 wherein n is 2.

33. The pyrimidine derivative or analogue of claim 31 wherein n is 3.

34. The pyrimidine derivative or analogue of claim 1 wherein the moiety B is –OZ.

35. The pyrimidine derivative or analogue of claim 34 wherein Z is hydrogen.

36. The pyrimidine derivative or analogue of claim 34 wherein Z is alkyl.

37. The pyrimidine derivative or analogue of claim 36 wherein Z is selected from the group consisting of methyl, ethyl, butyl, propyl, and isopropyl.

38. The pyrimidine derivative or analogue of claim 1 wherein the moiety B is $N(Y_1)$-D.

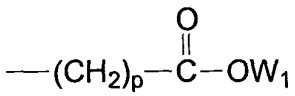
39. The pyrimidine derivative or analogue of claim 38 wherein Y_1 is hydrogen.

40. The pyrimidine derivative or analogue of claim 38 wherein Y_1 is lower alkyl.

41. The pyrimidine derivative or analogue of claim 40 wherein Y_1 is methyl.

42. The pyrimidine derivative or analogue of claim 38 wherein D is a moiety having at least one polar, charged, or hydrogen-bond-forming group to increase the water-solubility of the pyrimidine derivative or analogue.

43. The pyrimidine derivative or analogue of claim 42 wherein D is a carboxylic acid or carboxylic acid ester with the structure

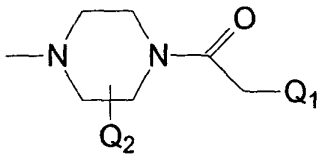


wherein p is an integer from 1 to 6 and W_1 is selected from the group consisting of hydrogen and lower alkyl.

44. The pyrimidine derivative or analogue of claim 43 wherein W_1 is hydrogen.

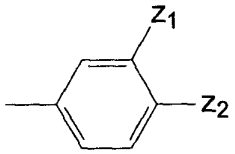
45. The pyrimidine derivative or analogue of claim 43 wherein W_1 is ethyl.

46. The pyrimidine derivative or analogue of claim 42 wherein D and Y_1 are taken together to form a piperazine derivative of the structure



wherein Q_1 is hydrogen, methyl, ethyl, butyl, or propyl, and Q_2 is hydrogen or methyl, where, if Q_2 is methyl, it can be located at either of the two possible positions in the piperazine ring.

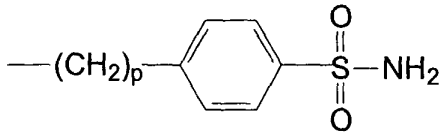
47. The pyrimidine derivative or analogue of claim 42 wherein D has the structure



where one of Z_1 and Z_2 is hydrogen, and the other of Z_1 and Z_2 is –COOH or -$COOW_1$, wherein W_1 is alkyl.

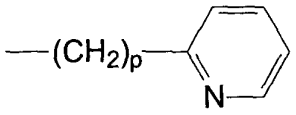
48. The pyrimidine derivative or analogue of claim 47 wherein W_1 is selected from the group consisting of methyl, ethyl, propyl, butyl, and isobutyl.

49. The pyrimidine derivative or analogue of claim 42 wherein D is a phenylsulfonamidyl moiety of the structure



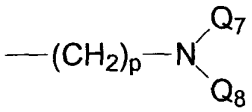
wherein p is an integer from 0 to 6.

50. The pyrimidine derivative or analogue of claim 42 wherein D is an alkylpyridyl moiety of structure



wherein p is an integer from 1 to 6.

51. The pyrimidine derivative or analogue of claim 42 wherein D is a dialkylaminoalkyl moiety of the structure



wherein p is an integer from 1 to 6 and Q_7 and Q_8 are alkyl, aralkyl, heteroaralkyl, aryl, heteroaryl, alkanoyl, aroyl, aralkanoyl, heteroaralkanoyl, or heteroaroyl in which the alkyl portions can be cyclic and can contain from 1 to 3 heteroatoms which can be N, O, or S, and when Q_7 and Q_8 are present together and are alkyl, they can be taken together to form a 5 or 6 member ring which may contain 1 other heteroatom which can be N, O, or S, of which the N may be further substituted with Y_2, where Y_2 is alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, alkanoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, aralkylsulfonyl, heteroaralkylsulfonyl, alkoxycarbonyl, aryloxycarbonyl, heteroaryloxycarbonyl, aralkoxycarbonyl, heteroaralkoxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, heteroarylaminocarbonyl, aralkylaminocarbonyl, or heteroaralkylaminocarbonyl, in which the alkyl portions can be cyclic and can contain from 1 to 3 heteroatoms which can be N, O, or S.

52. The pyrimidine derivative or analogue of claim 51 wherein Q_7 and Q_8 are each alkyl.

53. The pyrimidine derivative or analogue of claim 52 wherein Q_7 and Q_8 are each selected from the group consisting of methyl, ethyl, propyl, and isopropyl.

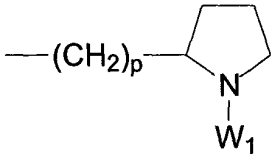
54. The pyrimidine derivative or analogue of claim 52 wherein Q_7 and Q_8 are taken together to form a five- or six-membered optionally substituted ring.

55. The pyrimidine derivative or analogue of claim 54 wherein the ring is a morpholinyl ring.

56. The pyrimidine derivative or analogue of claim 54 wherein the ring is a pyrrolidinyl ring that is optionally substituted with oxo.

57. The pyrimidine derivative or analogue of claim 54 wherein the ring is a piperidinyl ring that is optionally substituted with methyl or ethyl.

58. The pyrimidine derivative or analogue of claim 42 wherein D is an alkylpyrrolidinyl moiety of the structure



wherein p is an integer from 1 to 6 and W_1 is selected from the group consisting of methyl, ethyl, and propyl.

59. The pyrimidine derivative or analogue of claim 1 that has a logP of from about 1 to about 4.

60. A pyrimidine derivative or analogue that is 4-[3-(2-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid ethyl ester.

61. A pyrimidine derivative or analogue that is 4-[3-(6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid ethyl ester.

62. A pyrimidine derivative or analogue that is 4-[3-(5-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid ethyl ester.

63. A pyrimidine derivative or analogue that is 4-[3-(2-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid.

64. A pyrimidine derivative or analogue that is 4-[3-(6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid.

65. A pyrimidine derivative or analogue that is 4-[3-(5-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid.

66. A pyrimidine derivative or analogue that is 3-[3-(2-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid ethyl ester.

67. A pyrimidine derivative or analogue that is 3-[3-(6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid ethyl ester.

68. A pyrimidine derivative or analogue that is 3-[3-(5-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid ethyl ester.

69. A pyrimidine derivative or analogue that is 3-[3-(2-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid.

70. A pyrimidine derivative or analogue that is 3-[3-(6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid.

71. A pyrimidine derivative or analogue that is 3-[3-(5-amino-6-chloropyrimidin-4-ylamino)propionylamino] benzoic acid.